

02-18-04

HDP/SB/21 based on PTO/SB/21 (08-00)

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# TRANSMITTAL FORM

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<b>TRANSMITTAL FORM</b>	Application Number	10/752,604	
	Filing Date	January 7, 2004	
	First Named Inventor	Donald Umstadter et al.	
	Group Art Unit	Unknown	
	Examiner Name	Unknown	
Total Number of Pages in This Submission		Attorney Docket Number	2115D-002758

## ENCLOSURES (check all that apply)

<input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment / Response <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input checked="" type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/ Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Assignment Papers (for an Application) <input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____	<input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): <b>Form HDP-1449 (with references: 21 x other); and return receipt postcard)</b>
Remarks The Commissioner is hereby authorized to charge any additional fees that may be required under 37 CFR 1.16 or 1.17 to Deposit Account No. 08-0750. A duplicate copy of this sheet is enclosed.		

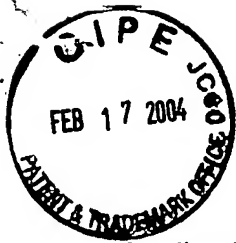
## SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Harness, Dickey & Pierce, P.L.C.	Attorney Name	Linda M. Deschere	Reg. No.	34,811
Signature					
Date	17 February 2004				

## CERTIFICATE OF MAILING/TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service as express mail in an envelope addressed to: Director of the U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450, or facsimile transmitted to the U.S. Patent and Trademark Office on the date indicated below.			
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Signature		Date	17 February 2004

EV 406 074 532 US



**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Application No.: 10/752,604  
Filing Date: January 7, 2004  
Applicant: Donald Umstadter et al.  
Group Art Unit: Unknown  
Examiner: Unknown  
Title: ULTRA-SHORT WAVELENGTH X-RAY SYSTEM  
Attorney Docket: 2115D-002758

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Director of the United States Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450

**INFORMATION DISCLOSURE STATEMENT**

Sir:

Pursuant to 37 C.F.R. §§ 1.56, 1.97 and 1.98, Applicant hereby submits an Information Disclosure Statement for consideration by the Examiner.

I. LIST OF PATENTS, PUBLICATIONS, AND OTHER INFORMATION

The patents, publications and other information requested to be considered by the Office (except unpublished U.S. patent applications) are listed on Form 1449 attached hereto.

II. COPIES

A. \_\_\_\_ Submitted herewith is a legible copy of (i) each U.S. patent application publication and U.S. and foreign patent; (ii) each publication or that portion which caused it to be listed; (iii) for each cross-referenced pending U.S. application listed below in Section IV, the application specification including the claims, and any drawing of the application which caused it to be listed including the claims directed to that portion; and (iv) all other information or that portion which caused it to be listed.

B. \_\_\_\_ Any patents, publications or other information which are listed on Form 1449 or on the copies of PTO-892, but which are not enclosed herewith, were previously cited by or submitted to the PTO in one of the following applications which has been relied upon for an earlier filing date under 35 U.S.C. § 120:

U.S. Serial Number

U.S. Filing Date

C. X Because the present application was/is being filed after June 30, 2003, no copies of the U.S. patents or U.S. patent application publications which are listed on the attached Form 1449 are enclosed pursuant to the waiver of 37 C.F.R. § 1.98(a)(2)(i). Any foreign patent documents or non-patent literature listed on the attached Form 1449 are enclosed herewith.

D. \_\_\_\_ This is a PCT application in the entry of the National Phase in the United States. A copy of the International Search Report is attached for the Examiner's information. The documents listed on the International Search Report are listed on the attached Form-1449 for consideration by the Examiner and for listing on any patent resulting from this application. If the International Search Report was from the US, EPO, or JPO search authorities, copies of these references should have been supplied to the USPTO under the trilateral agreement and are believed to be in the file of the above-identified application. (MPEP 1893.03(g))

III. CONCISE EXPLANATION OF THE RELEVANCE (check at least one box)

A. X Except as may be indicated below in (B), all of the patents, publications or other information are in the English language (concise explanation not required).

B. \_\_\_\_ A concise explanation of the relevance of each patent, publication or other information listed that is not in the English language is as follows (see 37 C.F.R. § 1.98(a)(3)):

1. \_\_\_\_ See the attached foreign patent office communication from a counterpart foreign application.
2. \_\_\_\_ English translations are provided.
3. \_\_\_\_ Other:

C. \_\_\_\_ The following additional information is provided for the Examiner's consideration.

IV. CROSS REFERENCE TO RELATED APPLICATION(S)

A. \_\_\_\_ The Examiner is advised that the following co-pending application(s) contain(s) subject matter that may be related to the present application. By bringing this(these) application(s) to the Examiner's attention, Applicant(s) does(do) not waive the confidentiality provisions of 35 U.S.C. § 122.

Serial No.

Filing Date

Art Unit

V. THIS IDS IS BEING FILED UNDER

A. X **37 C.F.R. § 1.97(b):** (check only one box)

1. X within three months of the filing date of a national application other than a continued prosecution application under § 1.53(d) (37 C.F.R. § 1.97(b)(1)). No fee or certification is required.

2. \_\_\_\_ within three months of the date of entry of the national stage as set forth in §1.491 in an international application (37 C.F.R. § 1.97(b)(2)). No fee or certification is required.

3. \_\_\_\_ before the mailing of a first Office Action on the merits (37 C.F.R. § 1.97(b)(3)). No fee or certification is required. In the event that a first Office Action on the merits has been issued, please consider this IDS under 37 C.F.R. § 1.97(c) and see the certification under 37 C.F.R. § 1.97(e) below; or, if no certification has been made, charge our deposit account a fee in the amount of \$180.00 as required by 37 C.F.R. § 1.17(p).

4. \_\_\_\_ before the mailing of a first Office Action after the filing of a request for continued examination under 37 C.F.R. § 1.114. No fee or certification is required.

B. \_\_\_\_ **37 C.F.R. § 1.97(c):** (check only one box)

before the mailing date of either any Final Office Action under 37 C.F.R. § 1.113, a Notice of Allowance under 37 C.F.R. § 1.311, or an action that otherwise closes prosecution.

1. \_\_\_\_ No certification; therefore, a fee in the amount of \$180.00 is required by 37 C.F.R. § 1.17(p).

2. \_\_\_\_ See the certification below. No fee is required.

C. \_\_\_\_ **37 C.F.R. § 1.97(d):**

after the mailing date of either a Final Office Action under 37 C.F.R. § 1.113 or a Notice of Allowance under 37 C.F.R. § 1.311, yet on or before payment of the issue fee.

1. \_\_\_\_ See the certification below. A fee in the amount of \$180.00 is required by 37 C.F.R. § 1.17(p).

VI. **CERTIFICATION UNDER 37 C.F.R. § 1.97(e):** (check only one box)

The undersigned hereby certifies that:

A. \_\_\_\_ each item of information contained in this IDS was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this IDS (See 37 C.F.R. § 1.97(e)(1)). See further statement under 37 C.F.R. § 1.704(d) below in section VII, if applicable; or

B. \_\_\_\_ no item of information contained in this IDS was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, no item of information contained in this IDS was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this IDS (See 37 C.F.R. § 1.97(e)(2)).

C. \_\_\_\_ Some of the items of information were first cited in a communication from a foreign patent office. As to this information, the undersigned hereby certifies that each item of information contained in this IDS was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this IDS. As to the remaining information, the undersigned hereby certifies that no item of this remaining information contained in this IDS was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, no item of information contained in this IDS was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this IDS.

VII. STATEMENT UNDER 37 CFR 1.704(d)

The undersigned hereby states that:

\_\_\_\_ each item of information contained in this IDS was cited in a communication from a foreign patent office in a counterpart application and this communication was not received by any individual designated in 37 C.F.R. § 1.56(c) more than thirty days prior to the filing of this IDS.

VIII. PAYMENT OF FEES (check only one box)

A. \_\_\_\_ A check in the amount of \$180.00 is enclosed for the above-identified fee.

B. \_\_\_\_ Please charge Deposit Account No. **07-0960** in the amount of \$180.00 for the above-indicated fee. A duplicate copy of this paper is attached.


The above references are being cited only in the interest of candor and without any admission that they constitute statutory prior art, contain matter which anticipates the invention, or which would render the same obvious, either singly or in combination, to a person of ordinary skill in the art. Furthermore, this Information Disclosure Statement shall not be construed as a representation that a search has been made.

If it is determined that this IDS has been filed under the wrong rule, the PTO is requested to consider this IDS under the proper rule (with a petition if necessary) and charge the appropriate fee to Deposit Account No. **07-0960**.

Please charge any additional fees or credit any overpayment pursuant to 37 C.F.R. § 1.16 or § 1.17 to Deposit Account No. **07-0960**.

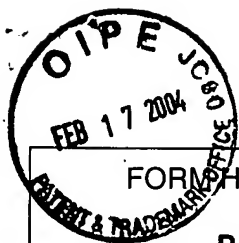
Respectfully submitted,

Dated: 17 February 2004

By:   
Linda M. Deschere  
Reg. No. 34,811

HARNES, DICKEY & PIERCE, P.L.C.  
P.O. Box 828  
Bloomfield Hills, Michigan 48303  
(248) 641-1600

LDES/lf-s



FORM PDP-1449 (Based on Form PTO-1449)

**PATENT AND TRADEMARK OFFICE  
INFORMATION DISCLOSURE CITATION**  
(Use several sheets if necessary)

Sheet 1 of 3

ATTORNEY DOCKET NO.

2115D-002758

SERIAL NO.

10/752,604

APPLICANT

Donald Umstadter et al.

FILING DATE

January 7, 2004

GROUP

Unknown

**U.S. PATENT DOCUMENTS**

Ref. Desig.	Examiner's Initials	Document Number	Date	Name	Class/ Subclass	(If appropriate) Filing Date
1.		5,198,674	03/30/1993	Underwood		
2.		5,353,291	10/04/1994	Sprangle et al.		
3.		5,606,588	02/25/1997	Umstadter et al.		
4.		5,637,966	06/10/1997	Umstadter et al.		
5.		5,789,876	08/04/1998	Umstadter et al.		
6.		5,892,810	04/06/1999	Sprangle et al.		
7.		6,332,017	12/18/2001	Carroll et al.		
8.		6,624,880	09/23/2003	Sandström et al.		

**FOREIGN PATENT DOCUMENTS**

Ref. Desig.	Examiner's Initials	Document Number	Date	Country	Class/ Subclass	Translation Yes	No
1.		NONE					

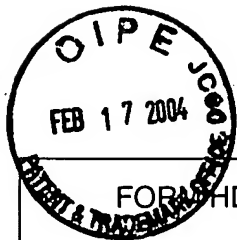
**OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, etc.)**

Ref. Desig.	Examiner's Initials	
1.		A. Gover and P. Sprangle. "A Unified Theory of Magnetic Bremsstrahlung, Electrostatic Bremsstrahlung, Compton-Raman Scattering, and Cerenkov-Smith-Purcell Free-Electron Lasers." IEEE Journal of Quantum Electronics, QE-17:1196, 1981.
2.		D. Umstadter. "Laser-driven x-ray sources." 2003 Yearbook in Science and Technology. McGraw-Hill, New York, 2003.
3.		E. Jerby and A. Gover. "Investigation of the Gain Regimes and Gain Parameters of the Free Electron Laser Dispersion Equation." IEEE Journal of Quantum Electronics, QE-21:1041, 1985.

Examiner:

Date Considered:

EXAMINER: Please initial if citation considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



FOR HDP-1449 (Based on Form PTO-1449)

**PATENT AND TRADEMARK OFFICE  
INFORMATION DISCLOSURE CITATION**

(Use several sheets if necessary)

Sheet 2 of 3

ATTORNEY DOCKET NO.

SERIAL NO.

2115D-002758

10/752,604

APPLICANT

Donald Umstadter et al.

FILING DATE

GROUP

January 7, 2004

Unknown

**OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, etc.)**

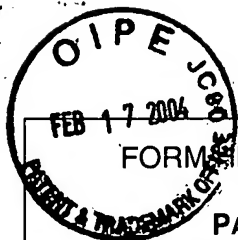
Ref. Desig.	Examiner's Initials	
4.		E. S. Sarachik and G. T. Schappert. "Classical Theory of the Scattering of Intense Laser Radiation by Free Electrons." Phys. Rev. D, 1:2738, 1970.
5.		F. He, Y. Y. Lau, D. P. Umstadter, and R. Kowalczyk. "Backscattering of an Intense Laser Beam by an Electron." Phys. Rev. Lett., 90:055002, 2003.
6.		F. He, Y. Y. Lau, D. P. Umstadter, and T. Strickler. "Phase dependence of Thomson scattering in an ultraintense laser field." Physics of Plasmas, 9:4325, 2002.
7.		M. I. K. Santala, Z. Najmudin, E. L. Clark, M. Tatarskie, K. Krushelnick, A. E. Dangor, V. Malka, J. Faure, R. Allott, and R. J. Clarke. "Observation of a Hot High-Current Electron Beam from a Self-Modulated Laser Wakefield Accelerator." Phys. Rev. Lett., 86:1227, 2001.
8.		M. M. Kekez. "Simple sub-50-ps rise-time high voltage generator." Rev. Sci. Instr., 62:2923, 1991.
9.		M. Zolotarev. "Laser driven attosecond SASE X-ray FEL." Nuclear Instr. and Methods in Phys. Research A, 483:445, 2002.
10.		P. Catravas, E. Esarey and W. P. Leemans. "Femtosecond x-rays from Thomson scattering using laser wakefield accelerators." Meas. Sci. Technol. 12:1828, 2001.
11.		R. Wagner, S. Y. Chen, A. Maksimchuk, and D. Umstadter. "Electron Acceleration by a Laser Wakefield in a Relativistically Self-Guided Channel." Phys. Rev. Lett., 78:3125, 1997.
12.		S. Banerjee, A. R. Valenzuela, R. C. Shah, A. Maksimchuk, and D. Umstadter. "High harmonic generation in relativistic laser-plasma interaction." Physics of Plasmas, 9:2399, 2002.
13.		S. Banerjee, A. R. Valenzuela, R. C. Shah, A. Maksimchuk, and D. Umstadter. "High-harmonic generation in plasmas from relativistic laser-electron scattering." J. Opt. Soc. Am. B, 20, 2003.
14.		S. D. Baton, et al. "Evidence of Ultrashort Electron Bunches in Laser-Plasma Interactions at Relativistic Intensities." Phys. Rev. Lett., 91:105001, 2003.
15.		S. V. Bulanov, F. Pegoraro, A. M. Pukhov, and A. S. Sakharov. "Transverse-Wake Wave Breaking." Phys. Rev. Lett., 78:4205, 1997.

Examiner:

Date Considered:

EXAMINER: Please initial if citation considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.





FORM PDP-1449 (Based on Form PTO-1449)

**PATENT AND TRADEMARK OFFICE  
INFORMATION DISCLOSURE CITATION**

(Use several sheets if necessary)

Sheet 3 of 3

ATTORNEY DOCKET NO.

SERIAL NO.

2115D-002758

10/752,604

APPLICANT

Donald Umstadter et al.

FILING DATE

GROUP

January 7, 2004

Unknown

**OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, etc.)**

Ref. Desig.	Examiner's Initials	
16.		S. V. Mitko, Y. B. Udalov, P. J. M. Peters, V. N. Ochkin, and K. J. Boller. "Generation of powerful electron beams in a dense gas with a dielectric-barrier-discharge-based cathod." Appl. Phys. Lett., 83:2760, 2003.
17.		S. Y. Chen, A. Maksimchuk, and D. Umstadter. "Experimental observation of nonlinear Thomson scattering." Nature, 396:653, 1998.
18.		T. Sekikawa, T. Kanai, and S. Watanabe. "Frequency-Resolved Optical Gating of Femtosecond Pulses in the Extreme Ultraviolet." Phys. Rev. Lett., 91:103902, 2003.
19.		V. Malka, et al. "Electron Acceleration by a Wake Field Forced by an Intense Ultrashort Laser Pulse." Sciences, 298:1596, 2002.
20.		Y. Salamin and F. M. H. Faisal. "Harmonic generation by superintense light scattering from relativistic electrons." Phys. Rev. A, 54:4383, 1996.
21.		Y. Y. Lau, F. He, D. Umstadter, and R. Kowalczyk. "Nonlinear Thomson scattering: A tutorial." Physics of Plasmas, 10:2155, 2003.

Examiner:

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